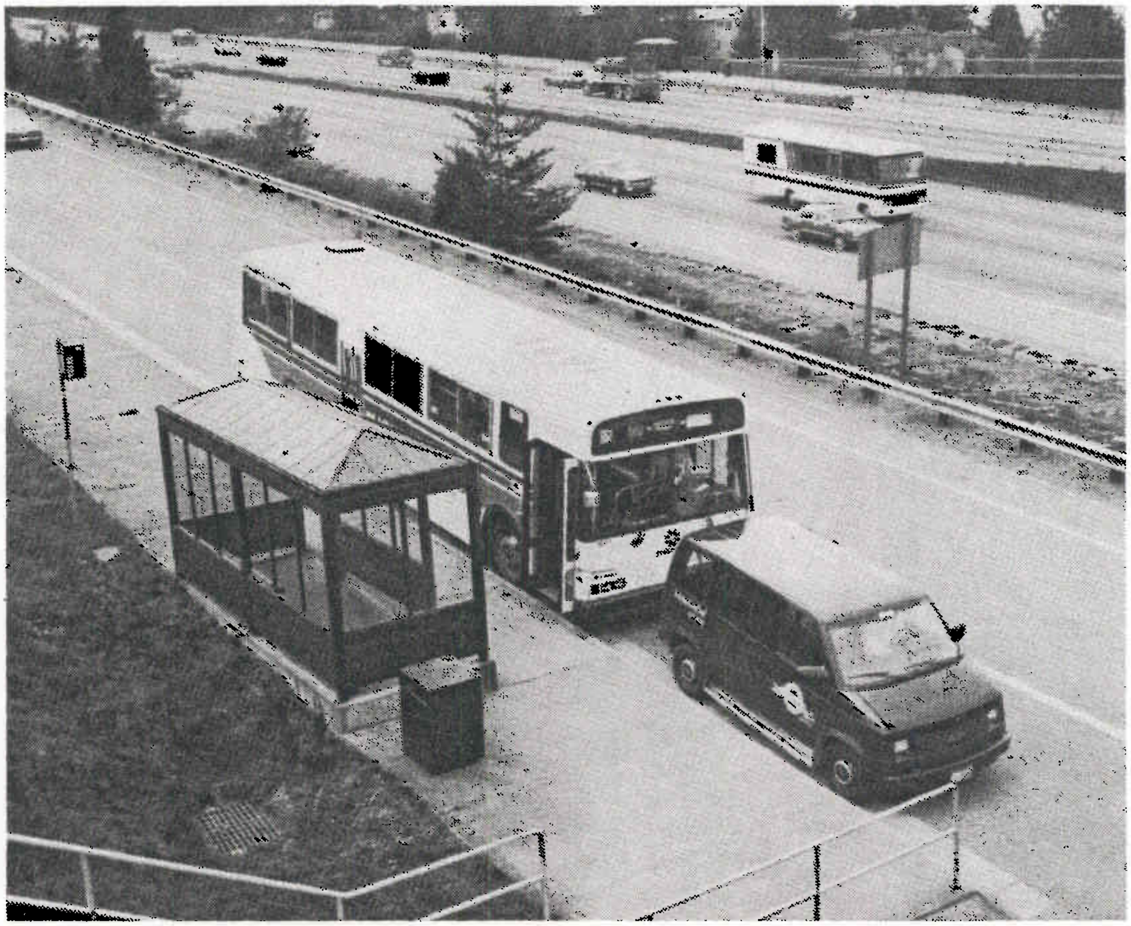

Metro Transportation Facility Design Guidelines

March 1991

METRO

Municipality of Metropolitan Seattle

METRO TRANSPORTATION FACILITY DESIGN GUIDELINES

Municipality of Metropolitan Seattle

March 1991

ACKNOWLEDGEMENTS

The revision of the Metro Transportation Facility Design Guidelines was coordinated by Eileen Kadesh of the Service Development Division.

Special thanks are extended to the individuals who served on the work team that reviewed the document and provided updated information on specific facilities. Most of these staff persons are listed on page vi (Metro Contacts for Specific Facilities). Other individuals who served on the work team but are not listed include Sue Stewart (Safety and Training), Bob Carroll (Community Relations), Mike Bergman (Service Development) and Lanny Snyder (Capital Planning and Development).

Appreciation is also extended to Jack Lattemann of Service Development, Nancy Dudgeon of Word Processing, and Doug Hammond of Graphics for making this project possible.

To all the Metro staff who worked together to produce this document, thank you.

Paul Toliver

Paul Toliver
Director of Transit

INTRODUCTION

The purpose of this document is to provide information concerning the guidelines and standards used by the Municipality of Metropolitan Seattle in the design of transit and ridesharing facilities. These guidelines are intended for use by state agencies, public works and planning departments, developers, and interested individuals. Metro's objective in providing this information is twofold. The primary objective is to encourage the inclusion of transit and ridesharing facilities in the initial design stages of new developments and roadway improvement projects. It is Metro's hope that this will enhance public transportation's ability to serve these new developments. In addition, costly and time consuming changes may be avoided which might otherwise delay the permit approval process. A secondary objective is to inform agency staffs and the general public how Metro sites and designs its facilities.

Rather than presenting detailed engineering specifications for each type of transportation facility, this document endeavors to provide an overview of each facility, including a definition of the facility, method of operation, basic dimensions, design criteria, and accepted standards. For additional details, outside agencies and individuals are invited to contact appropriate Metro staff at the phone numbers listed on page vi.

The dimensions presented in this document are intended as recommended standards. They may need to be modified in individual cases to meet site constraints or applicable local, state, and federal land use and permit requirements.

These Transportation Facility Design Guidelines are meant to serve as a companion document to Metro's Transportation Service Guidelines (revised 1987), which describes the conditions for establishing and evaluating new and existing transit service, and Encouraging Public Transportation through Effective Land Use Actions (May 1987).

It should be noted that Rail and Bus Facility Design Guidelines are also being prepared as part of Metro's High Capacity Transit Program. Once finalized, this information will be used for future facility siting and planning by Metro and other agencies, as appropriate.

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METRO CONTACTS FOR SPECIFIC FACILITIES

For additional details regarding facilities covered in this document, interested individuals should contact the designated Metro staff representatives at the phone numbers listed below or write to them at Metro at 821 Second Avenue, Mail Stop Number, Seattle, WA 98104.

It should also be noted that the Construction Information Center (684-1595) is the primary single source for receiving all information on construction projects affecting transit operations in King County. The Center is a centralized office where agencies, developers and contractors can provide information and have a single primary contact. In turn, this Center is responsible for distribution of information to the proper Metro divisions.

Facility Type	Metro Contact	Phone #	Mail Stop
Layover Space	Teri Lankford	684-1615	64
Transit Centers	John Earley	684-1637	51
Park-and-Ride Lots			
Permanent	Sondra Earley	684-1848	51
Leased	Paul Alexander	684-1599	64
Bicycle Parking Facilities	Bob Flor	684-1611	64
HOV Facilities	Tanya Jimale	684-1853	64
Commuter Information Centers	Donna Stark	684-2692	CK
Bus Zones	Mike Bergman	684-1593	64
Passenger Shelters	Paul Alexander	684-1599	64
Design Considerations for Access by Elderly and Disabled Passengers	Cathryn Rice	684-1601	64
Bus Stop Information Signs	Mary Kay Bauer	684-1566	42
Transit Vehicle Specifications	Mike Voris	684-1629	51
Vanpool Van Specifications	Syd Pawlowski	684-1542	60
TFASP	Paul Alexander	684-1599	64
Trolley Overhead	Andrea Tull	684-1642	51

Section 1
Vehicle Specifications and Needs

VEHICLE SPECIFICATIONS

Metro's vehicle fleet includes standard 40-foot and 35-foot buses and 40-foot trolleys; articulated 60-foot buses, trolleys and dual power buses; and vans. The characteristics and requirements of each of these vehicles can affect roadway design.

I. Vehicle Fleet Composition

A. Current Fleet Size

As of February 1991, Metro's fleet (including vans) consisted of a total of 1,521 vehicles in the following categories:

- 587 Standard diesel buses
- 352 Articulated diesel buses (An articulated bus is a two-section bus permanently connected at a joint. Fifty percent longer than a standard bus, an articulated bus can bend around corners. It has three axles.)
- 109 Standard trolley buses (A trolley bus is electrically powered and draws its current from a pair of overhead trolley wires.)
- 46 Articulated trolley buses
- 143 Articulated dual-power buses (These buses can operate as a diesel bus and as a trolley bus.)
- 284 Vanpool vans

A total of 916 of these vehicles are accessible.

B. Buses on Order

93 articulated dual-power buses are yet to be delivered. They are accessible and will operate on routes scheduled through the downtown Seattle bus tunnel.

II. Future Transit Vehicle Specifications

Of the transit vehicles to be added to Metro's fleet in the future, standard buses will operate like the 40 foot buses in service today; articulated buses have a nonsteered third axle, which means that the inner turning radius is less than that for an articulated coach with a steered third axle.

Vehicle specifications for Metro's fleet are shown on pages 1-3 and 1-4.

III. Transit Vehicle Requirements

Special consideration needs to be given when designing new facilities to be used by transit buses. Compared to automobiles, transit vehicles have longer wheelbases, more overhang, are wider, longer and taller, and have slow acceleration rates.

A. Bus Wheelbases

A longer wheelbase means that buses need more space to turn corners. (See pages 1-6 and 1-7.) The longer overhang means that the approach and departure angles on a bus are less than those on a car. Buses cannot negotiate changes in grade as well as cars. "Crest" vertical curves, such as those on the west sides of First through Fifth Avenues in downtown Seattle, are negotiable by transit buses if there is adequate vertical clearance midway between the axles. "Sag" vertical curves, such as those on the east side of First through Fifth Avenues in downtown Seattle, are negotiable by transit buses if there is adequate vertical clearance below the wheelchair lift, the front bumper and the rear bumper.

B. Bus Width and Length

The width and length of buses affect parking space size, lane width, and room for turning maneuvers. The height of buses must be considered when designing sky bridges, projecting canopies, etc.

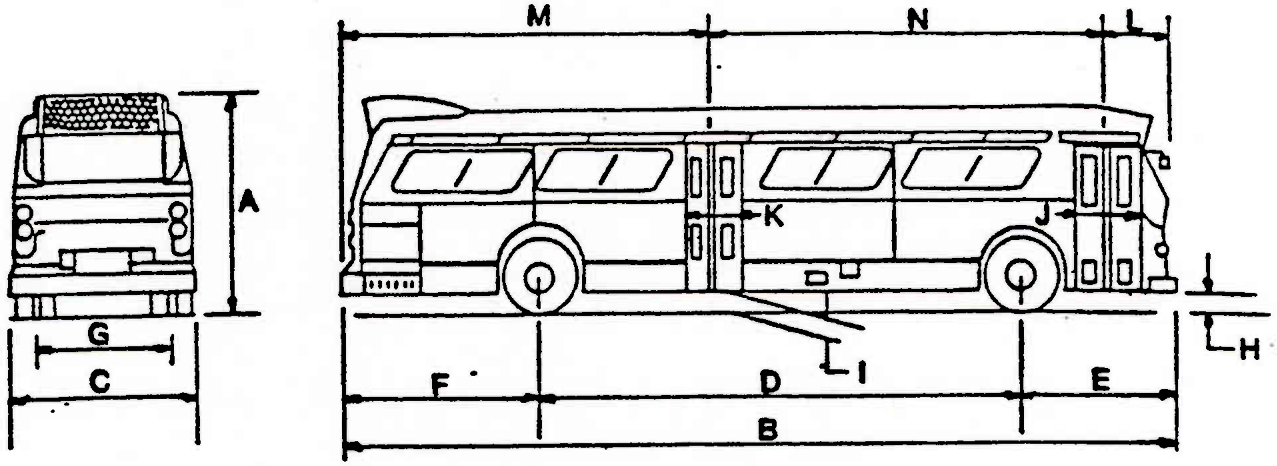
C. Acceleration

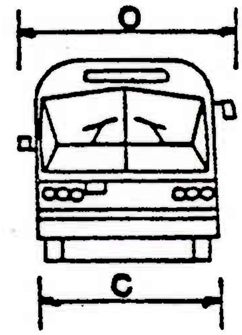
Freeway on-ramps with appreciable grades must be longer, or have bus and truck lanes to accommodate slower bus acceleration. Long, steep grades may require a slow lane for buses and trucks.

IV. Vanpool Requirements

The Metro VanPool Program uses 8, 11, 12 and 15 passenger one ton vans which require a minimum clearance of 7 feet, 3 inches. To accommodate these vans, parking garages need to be designed to provide safe access and circulation. Street level parking and/or the first level of parking in the garage should provide adequate van clearance.

Prior to purchasing vans or designing parking facilities, developers and employers are encouraged to contact Metro's VanPool Program.

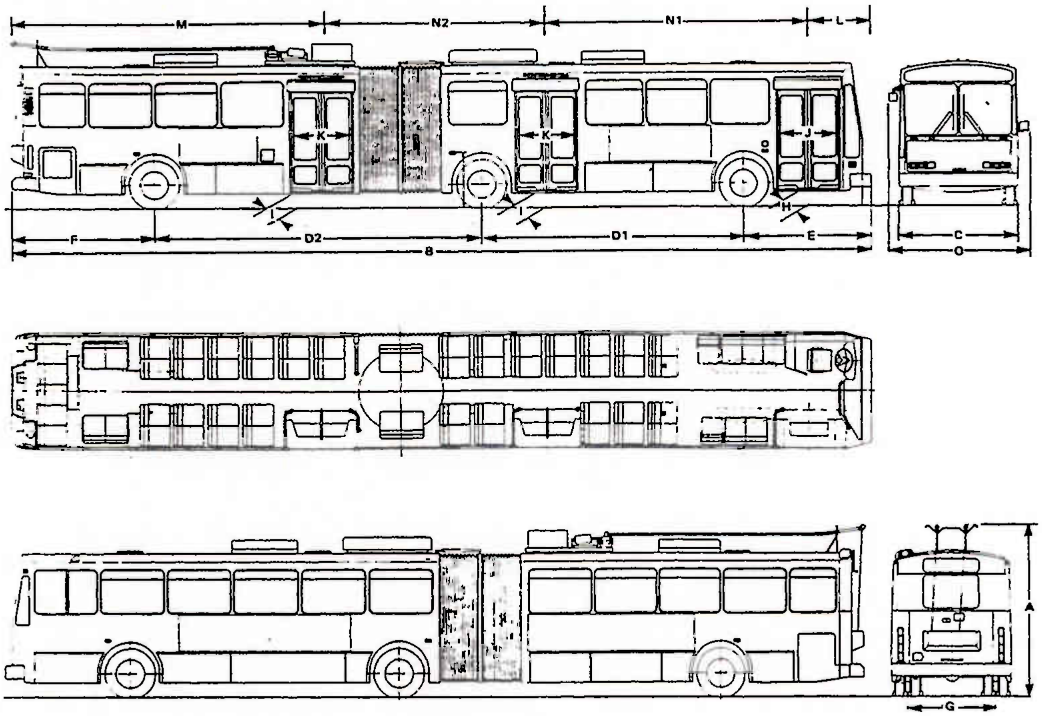




Quantity:	587 (+109 trolleys)
Year Built:	1976 - 1987
Make:	AM General, Flyer and M.A.N.
Fuel:	Diesel (579), Methanol (10), Electricity (109)
Seating Capacity:	44 - 46

Item		Design Vehicle
A	Overall Height	10' 5" motor; 11' 4" trolley
B	Overall Length	40' 1"
C	Overall Width	8' 6"
D	Wheel Base	23' 9"
E	Front Axle to Bumper	7' 2"
F	Rear Axle to Bumper	9' 4"
G	Distance between Rear Wheels	6' 5"
H	Step to Ground, Front	15"
I	Step to Ground, Rear	17"
J	Clr. Door Opening, Front	2' 4"
K	Clr. Door Opening, Rear	2' 3"
L	Centerline Door to Front	2' 11"
M	Centerline Door to Rear	17' 3"
N	Centerline Door to Door	20' 1"
O	Edge Mirror to Mirror	10' 4"
	Driver's Eye Height	87"
	Weight - empty	28,240 lbs.
	Weight - with 130% load	37,090 lbs.

FIGURE 1-1
Standard Bus Specifications



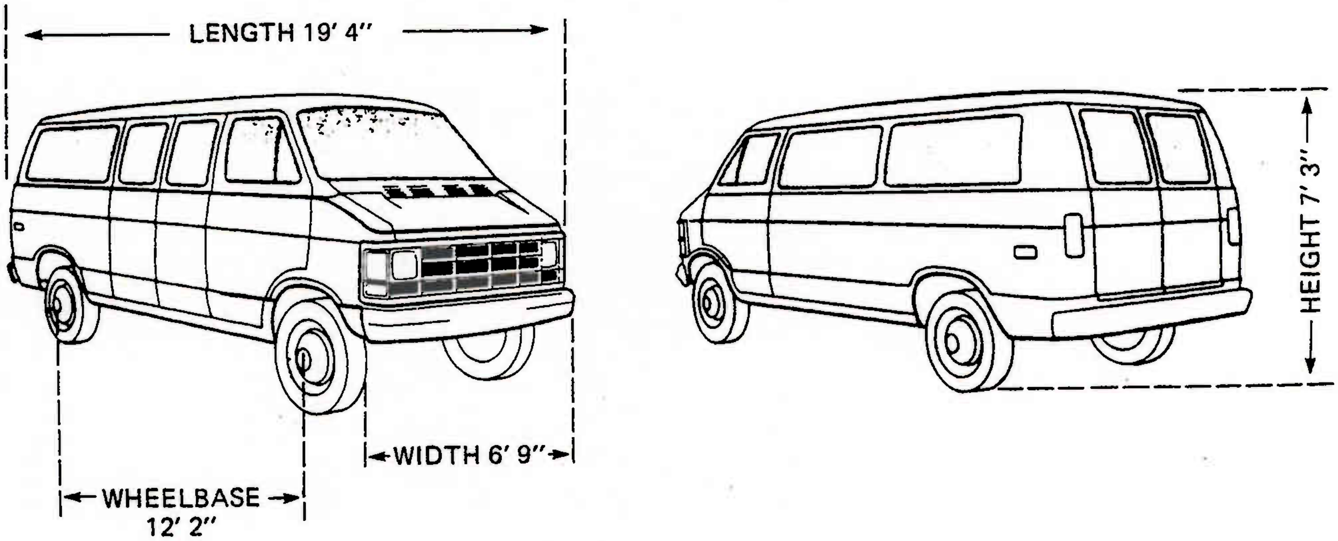
Quantity:	352 + 46 + 236
Year Built:	1978 - 1991
Make:	M.A.N., Breda
Fuel:	Diesel (352), Electricity (46), Dual Power (236)
Seating Capacity:	63 - 72

Item		Design Vehicle
A	Overall Height	12' 2"
B	Overall Length	61' 3"
C	Overall Width	8' 6"
D_1, D_2	Wheel Base (First/Second)	19' /17' 5"
E	Front Axle to Bumper	8' 11"
F	Rear Axle to Bumper	10' 1"
G	Distance between Rear Wheels	6' 3"
H	Step to Ground, Front	1' 2"
I	Step to Ground, Rear	1' 2"
J	Clr. Door Opening, Front	3' 7"
K	Clr. Door Opening, Rear	4' 2"
L	Centerline Door to Front	4' 5"
M	Centerline Door to Rear	21' 10"
N_1, N_2	Centerline Door to Door	19'/16'
O	Edge Mirror to Mirror	10' 4"
	Driver's Eye Height	91"
	Weight - empty	48,405 lbs.
	Weight - with 130% load	60,850 lbs.

FIGURE 1-2

Articulated Bus Specifications

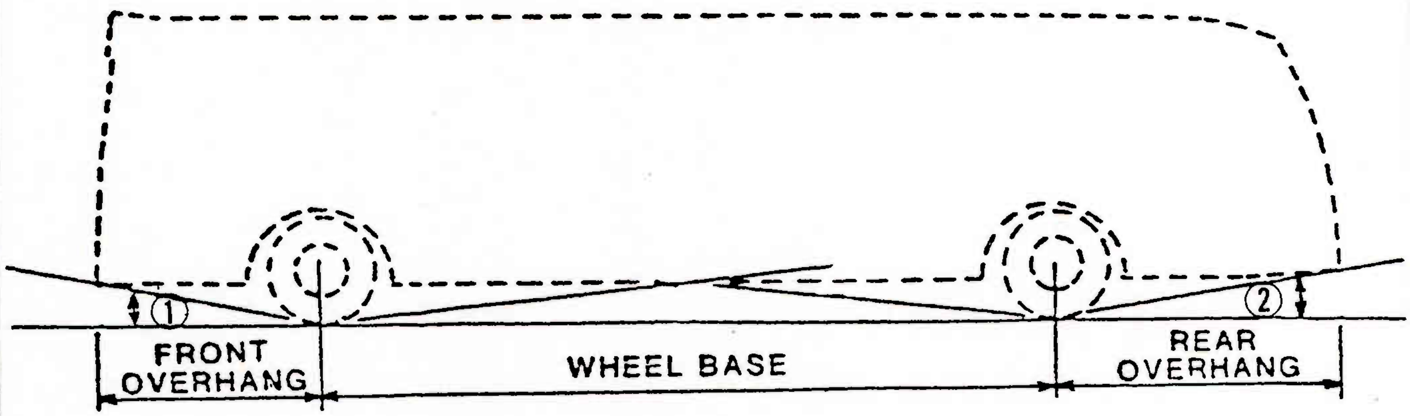
15- Passenger Van



Quantity:	284
Manufacturer:	Chevrolet and Dodge
Year Built:	1986 - 1990 models
Seating Capacity:	8, 11, 12 and 15 including the driver
Wheelbase:	Most minivans may be accommodated in all existing parking garage designs. The maximum wheelbase length for vans is 146".
GVW:	8,500 lbs. minimum (except mini-vans)
Turning Radius:	A 15-passenger van will require a minimum turning radius of 26 feet, 4 inches with a turning diameter (curb to curb) of a minimum of 52 feet, 5 inches.

Dimensions	12-passenger van	15-passenger van
Length	16" 10"	19' 4'
Width	6' 8"	6' 9"
Height	7' 3"	7' 3"
Wheelbase	10' 6"	12' 2"
Turning Radius	26' 4"	26' 4"

FIGURE 1-3
Vanpool Van Specifications



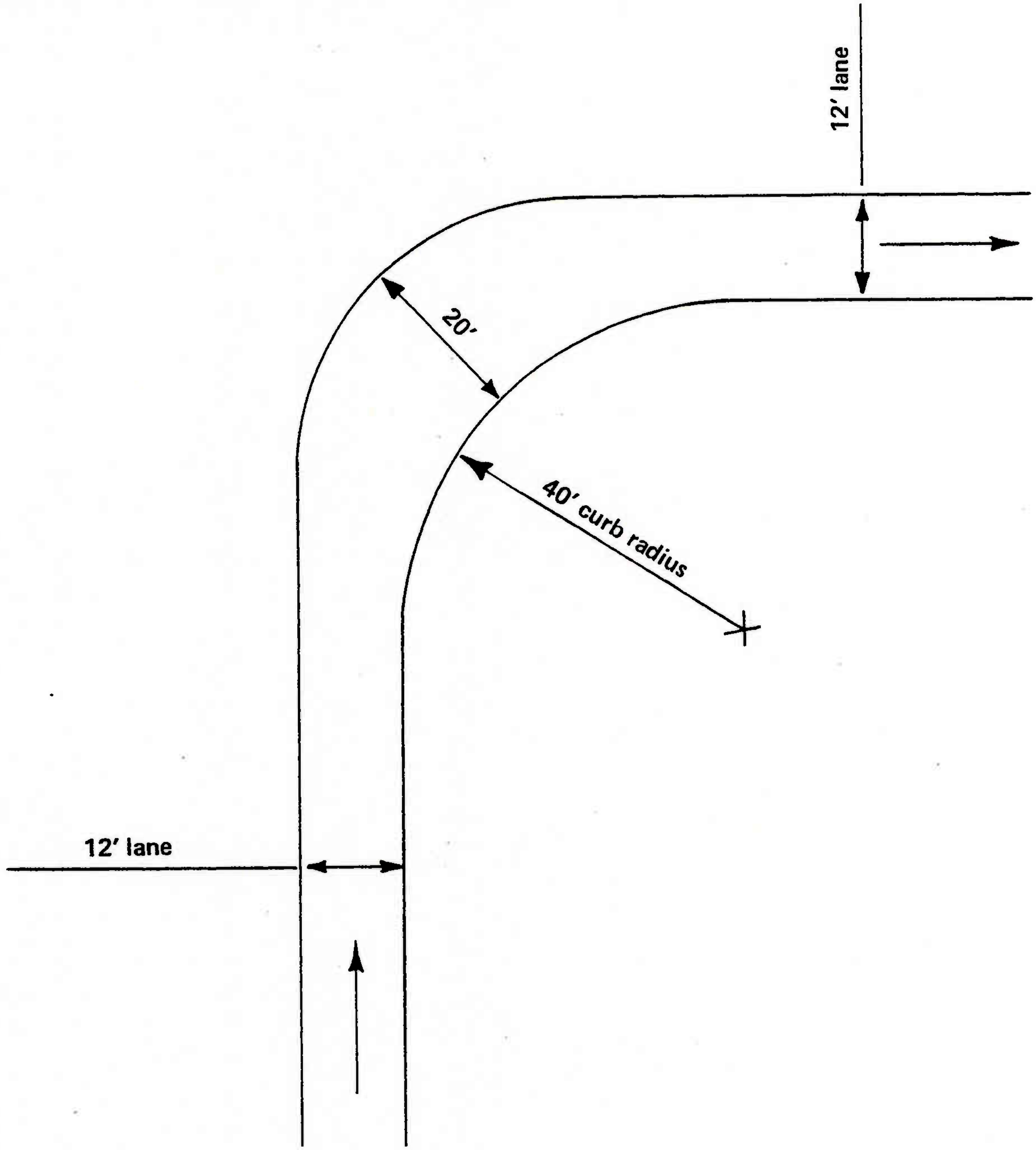
1 Approach Angle

2 Departure Angle

Vehicle Class	Approach	Departure
60′ Articulated Transit Bus	9°	8°
40′ Standard Transit Bus	8° 45′	8°

FIGURE 1-4

Underbody Clearance for Driveway Design



This configuration allows comfortable street speed operation for 35 foot, 40 foot, and 60 foot transit buses. Anything less requires the buses to occupy two lanes entering and departing from such turns.

FIGURE 1-5
Transit Bus Turning Template

LAYOVER SPACE

A layover is when a bus is scheduled to be at a bus stop longer than the time needed to load and unload passengers. All layovers are shown in the planning schedule pages by listing both an arrival time at the end of a trip and a departure time at the beginning of the next trip from the specific time point. A layover may occur at any location along the route.

I. General Guidelines

A. Distance from route

Metro tries to minimize the distance between the first/last stop served by a route and the layover location. A common zone for both functions is ideal if space permits. If a layover space is not located at the last stop, the layover should be beyond, rather than on, the revenue service portion of the route.

B. Turnaround Routing

Since layovers are needed at the ends of all routes the adjacent street system must have room for buses to turn around. Factors that would restrict turnaround operations include street width, pavement condition and sight clearance at intersections.

C. Paving

Concrete is preferable to asphalt. A minimum of 8 inches of concrete on 2 inches crushed rock or 2 inches of asphalt on a 4 inch ATB (Asphalt Treated Base) and 4 inches of 1-$\frac{1}{4}$" crushed rock base is recommended. The material used for the bus pad (concrete or asphalt) should be consistent with the material of the existing street surface.

D. Comfort Stations

To minimize service interruptions it may be best to locate the comfort station at the end of the line layover.

E. Engine Cool-down and Shut off

Diesel engines are to be idled for three minutes upon arrival at a layover point to allow cooling and are then to be shut off.

II. Location Considerations

Metro's buses begin and end (route) runs in both residential and commercial neighborhoods. Layover zones may be located in either neighborhood.

A. Residential Neighborhoods

To minimize impacts in residential neighborhoods, Metro's standard is to locate zones a minimum of 50 feet away from the nearest residence; 100 feet or more is optimal. Residential layover zones are typically used the most during the morning peak period because people are leaving the neighborhood to go to work.

B. Commercial Neighborhoods

In commercial areas, Metro attempts to avoid sight clearance problems, blockage of signs, and preemption of economically important short-term parking space adjacent to commercial property. In congested areas, several routes are usually scheduled into each layover zone. This complicates estimation of zone length required, and requires more intensive management by bus operators and supervisors.

III. Dimensions

The appropriate length of a layover space is determined by the number of routes sharing the zone, the scheduled overlap of layovers (if any), any special sight clearance problems for nearby driveways or intersections, and whether there is a need for independent pull-outs. This is all determined on a case-by-case basis, but the typical component of layover space for multiple coaches should be 60 feet straight curbline for each bus intended. In addition to this curbline actually required to park the coaches, space must also be provided for pull-in and pull-out. Sixty feet should be set aside for pull-in and, generally, 40 feet for pull-out. A 40-foot pull-out must be provided whenever buses are expected to merge back into travel lanes with competing general traffic. However, under special circumstances, the pull-out dimension may be reduced to 20 feet for standards and 30 feet for articulated coaches. This may occur if the buses are merging back into a bus-only lane, such as occurs at an off- street transit center. Additionally, within the coach parking area, it is customary to allow 2 feet between coaches along the curbline, recognizing that the buses will not actually park bumper to bumper. The actual parking lane used for parking, pull-in, and pull-out should be 12 feet wide.

The two examples on page 1-10 show how these guidelines might be applied to specific situations.

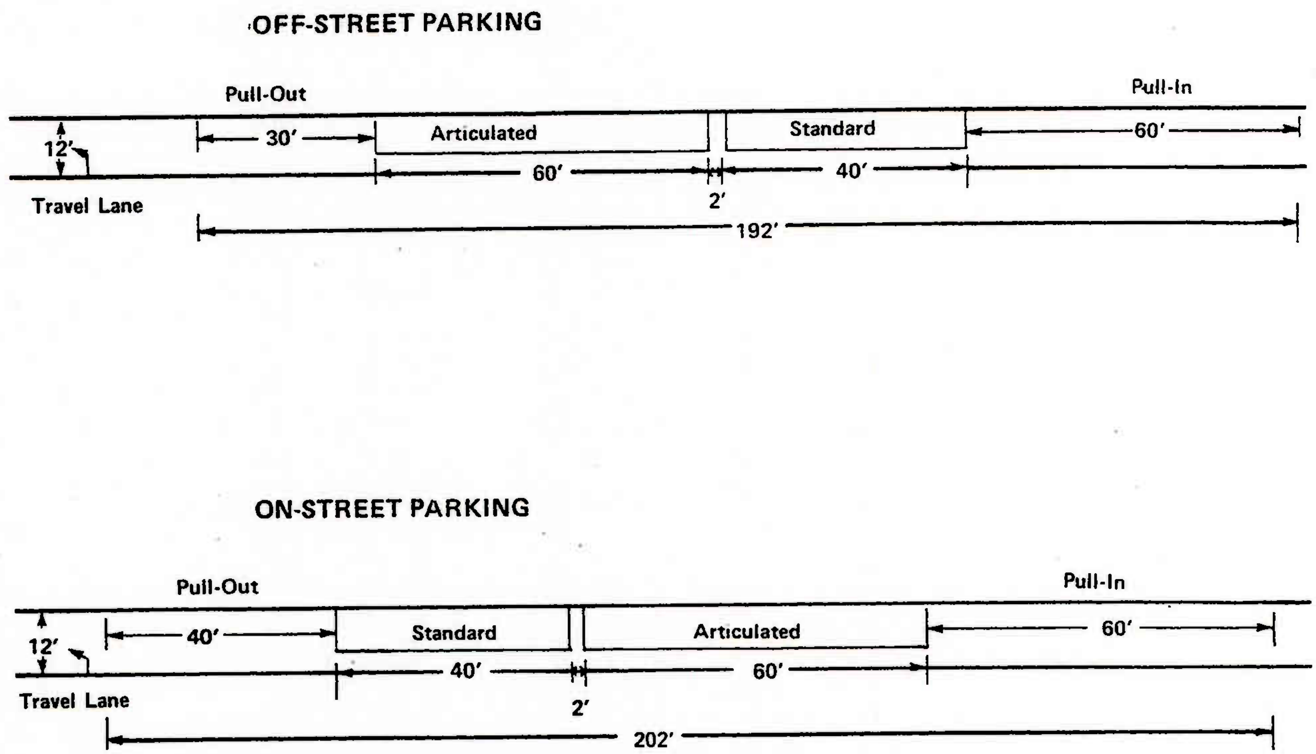


FIGURE 1-6

Typical Dimensions for Parking Multiple Coaches at Layover Areas and Transit Centers

TROLLEY OVERHEAD SYSTEM

I. Street Repairs

If local jurisdictions plan to make repairs to city streets where trolley coaches operate, trolley operating requirements need to be considered to prevent disruption to service. Trolley coaches can operate 12 to 15 feet beyond the centerline of the trolley wire to the outside edge of the coach so street repairs need to be accomplished within or outside that space. See attached drawing.

II. Trolley Wire Location

Trolley wire is located 12 feet and 14 feet from the curb (two parallel wires) if there is parking on the street, and 9 feet and 11 feet if not. Trolley wire is hung on cross spans at a height of 18-1/2 feet but it may sag to 17 to 17-1/2 feet in the middle of the street. Trolley wire height varies in some locations in Seattle. Questions about specific locations should be directed to Metro Power Distribution at 684-1910.

III. Eye Bolts

The use of eyebolts in lieu of trolley wire poles is pursued whenever reliable buildings or other structures are available. This is a cost saving measure which also minimizes impacts on sidewalks.

IV. Joint Use Poles

Joint use poles which include lighting and wire for traffic signals as well as trolley overhead support wire are pursued whenever possible to minimize impacts on sidewalks, and improve sightlines and street aesthetics as well as minimize the number of poles in specific areas. Cost sharing with the affected local jurisdictions is pursued. Specifications regarding the use of wood and steel poles should be followed. These are available from the Trolley Overhead-Electrical/Civil section at 684-1295.

V. Maintenance

Trees and shrubbery should be kept clear of trolley overhead wires. This is the responsibility of the local jurisdiction.

VI. Billing

Relocation of trolley overhead wire, eyebolts and poles will be done by Metro with costs borne by the contractor or developer requesting the move. Metro will bill the contractor or developer. These modifications to the trolley system will always be Metro's responsibility. This also covers the streetcar overhead and rails.

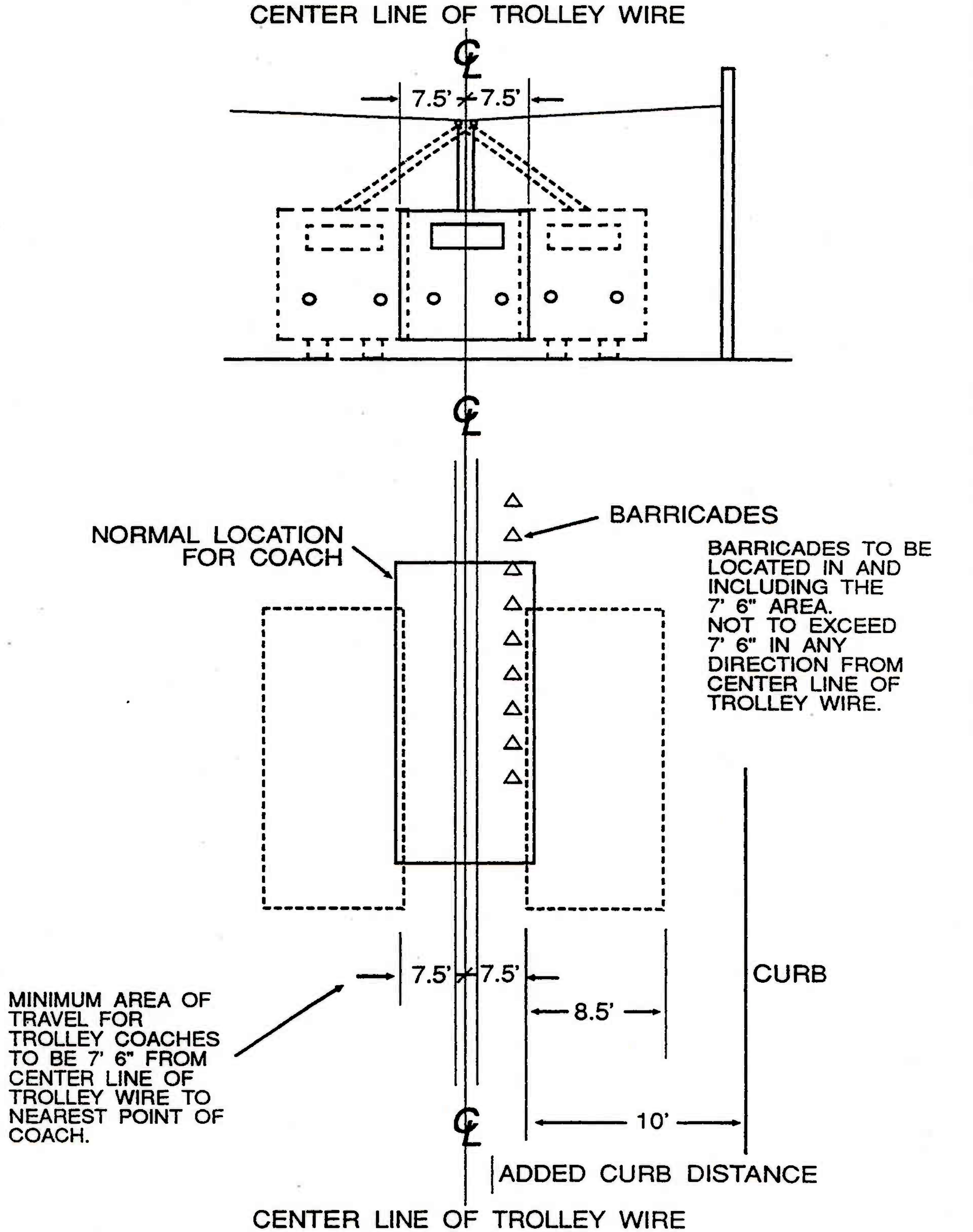


FIGURE 1-7

Trolley Coach Travel Area Required versus Construction Area

Section 2
Transfer and Destination Points

TRANSIT CENTERS

Transit centers are locations where groups of buses or other public transportation vehicles can be brought together. These facilities can vary from major bus stops on public right- of-way to off-street facilities with internal circulation entirely separated from general traffic.

I. Functions

Transit centers perform one or more of the following functions:

A. Transfer Point

Transit centers enable buses on two or more routes to come together at the same time, allowing patrons to transfer between the routes. The way transfers are scheduled dictates how many buses have to be accommodated at one time. This type of scheduling is called "timed-transfer."

B. End-of-Line Terminal

Transit centers can simply provide space to temporarily park coaches at the end of the line before the coach goes back into service and retraces its original route. These layovers, built into each route schedule, normally occur at the end of the line.

C. Destination Point

Transit centers can be sited to optimize pedestrian access to major activity centers, such as shopping areas. By locating the center at a major trip attractor, the transit center becomes a destination point for people who travel by bus.

D. Interface with Other Public Transportation Operators

Transit centers can promote transfer connections between different transportation systems. For example, Metro has developed transit centers at the north and south ends of its service area to provide an interface with Community Transit and Pierce Transit, respectively. Service coordination is not limited to conventional, fixed route bus systems. Taxis, intercity buses, and other paratransit operators can also be accommodated.

E. Public Visibility

Transit centers make transit service more visible to the community. By routing service through these centers, there is a physical presence that fosters greater public awareness of transit.

II. Siting Considerations

A. Site Identification

Locating the correct site for a transit center and securing community support for this decision is generally the most difficult task in developing a transit center. Once the functional requirements have been determined, alternative sites can be identified.

The following major criteria are considered in siting a transit center:*

- The location should not require major rerouting and excessive additional travel time for buses approaching or leaving.
- Adequate on-street or off-street area is needed for efficient and safe transit operation.
- Convenient pedestrian access should be provided to adjacent office, retail, or residential areas. For retail areas, 600 feet or less is desirable. For office and residential areas, 800 feet or less is preferred and 1,500 feet is maximum.
- Arterials with heavy traffic volumes should be avoided to minimize delays for transit vehicles entering or leaving the transit center, but the location should be accessible for pickup/dropoff and bicyclists.
- The location should be a point that can be served by three or more transit routes in an efficient schedule.
- A minimum of four in-service buses will be present simultaneously at the transit center.

B. Community Issues

The community concerns that surface most frequently during transit center siting negotiations are:

- markets to be served and projected changes in demand for transit service to the activity center
- impact on general traffic and congestion
- impact on parking supply
- concerns about security and pedestrian safety
- business access and visibility
- public right-of-way vs. private property
- identification of benefits for the affected community

*Source: Vukan Vuchic et al., Timed Transfer System Planning, Design and Operation, Final Report (Washington, D.C.: Urban Mass Transportation Administration, October 1981).

Metro is likely to approve a transit center if the center supports and improves Metro's service plans, supports adopted local plans and zoning, has an adopted budget for planning and construction, and has the support of the local community.

C. On-Street vs. Off-Street Designs

A critical factor determining the cost and complexity of a transit center is its location as either an on-street or off-street facility. On-street transit centers are located on or immediately adjacent to the public right-of-way along a public street. Property acquisition, if any, is minimal and is limited to the property required to augment existing public right-of-way. Easements, as opposed to purchase, are the preferred method of acquisition.

On-street transit centers require relatively low investment in signage, shelters, waiting areas, and pavement areas where buses stop. When siting an on-street transit center, the following criteria are considered:

- Street traffic volumes are low enough that they will not interfere with bus or pedestrian movements.
- Transferring passengers will not have to walk more than 120 feet along a linear set of stops to board a bus.
- Six or fewer in-service buses will be present at the transit center at one time.

On-street transit centers can take the form of straight curb stops, sawtooth curb stops, or bus pullouts. Straight curb stops can be located on the farside at an intersection, but this design requires transferring passengers to cross the intersection. An alternative is to locate far-side stops on one street, and near-side stops on the other, to avoid street crossings. Where transferring passengers must cross a street, attention must be given to safety and convenience in the form of designated crosswalks, signal protection, and directional information. See Figure 5.1.

Sawtooth curb stops have the advantages of shorter curb length and the capability for independent arrivals and departures. However, wider sidewalks must be built to accommodate the sawtooth bays.

The third type of on-street transit center utilizes bus pullouts. Although pullouts have the advantage of not blocking traffic lanes, they can have the shortcoming of making bus re-entry difficult into the general traffic lanes. Bus pullouts can be used on streets with only one travel lane per direction.

Off-street transit centers are located on private or other property, and internal circulation within the center is largely separated from general traffic on adjacent streets. Land acquisition for off-street transit centers can constitute a major portion of the project budget and add six months or more to the project schedule. Off-street facilities are more costly and complex than on-street facilities, but may represent the only feasible design if a suitable arterial street is not available.

When siting a transit center, off-street sites are only considered if one or more of the following criteria are met:

- The transit center is projected to accommodate four or more in-service coaches at one time.
- An acceptable off-street site that satisfies the locational and size requirements of the proposed transit center is made available to Metro, from either public or private sectors, at a nominal cost and with minimal procedural or legal complexity.
- There are no on-street sites that can offer sufficient platform space for pedestrians.
- Available on-street curb space cannot provide the required number of independent bus bays.
- Heavy traffic on local arterials has the potential to interfere with transit, pedestrians and other feeder modes. This is more a problem with on-street alternatives.
- Market demand, such as a regional shopping center, dictates that customers are better served by an off-street facility.

In addition to separation from general traffic, off-street transit centers should be designed to allow buses to turn into and out of adjacent streets in both directions. An off-street facility should also allow transit vehicles to turn around and provide adequate storage for waiting buses or vans. If the number of buses is small and visibility is good, passengers can be allowed to cross the roadway. Otherwise, an island design is desirable to minimize pedestrian crossings.

III. Facility Guidelines

A. Sizing Criteria

The size of any transit center is determined by the maximum number of coaches and pedestrians it must accommodate at one time. The service plan defines the maximum number of coaches that must be accommodated as well as the size and number of independent bus bays. Projected ridership determines the size of pedestrian facilities that must be provided.

1. Bus Parking Requirements

   a. Pulse scheduling requires the maximum amount of bus parking. Enough space is needed to accommodate all buses simultaneously for a 5- to 10-minute period. If there is little or no overlap in coach arrivals and departures, a set of coaches can operate with much less parking space.

   b. Parking space is determined by the maximum number of buses requiring independent pull-in and pull-out space. If all coaches are scheduled to arrive and depart simultaneously, sufficient curb space is provided to park all coaches head to tail. If each coach is independently scheduled, an independent parking space is provided for each.

   c. Dimensions required for parking multiple coaches at transit centers are the same as for layover areas. These dimensions are provided on Page 1-10 in Figure 1-5.

   d. For sawtooth bays, the transition area on either end of the bus is approximately 32 feet in length and 10 feet in depth. Sawtooth bays designed to accommodate one standard and one articulated coach require 174 feet of linear curbline.

   e. Although there is no limit to the number of coaches that can be assigned to an individual bay, it is generally desirable to assign no more than three coaches. There is independent pull-in and pull-out between bays but not for the two to three coaches within each bay. Since buses within each bay have no assigned position, passengers waiting to catch a particular bus must check all three positions to locate their coach. For three articulated coaches, this can result in a walk of 120 feet from the front coach to the third coach. Walking distances more than 120 feet are inconvenient for passengers and make transfers less reliable because patrons may not recognize that their coach has arrived.

2. Pedestrian Requirements

   a. Pedestrian volumes tend to peak if coaches are to make a coordinated connection under pulse scheduling. The transit center must be designed to meet these peak requirements.

   b. Pedestrian Planning and Design, by John J. Fruin is the most frequently consulted book on pedestrian design issues. Suggested guidelines for assessing the adequacy of platform space are as follows:

      - Enough sidewalk/platform space must be provided to accommodate all pedestrians (including those who are waiting, queuing, or simply walking up and down the sidewalk or platform) as well as disabled persons (visually impaired and those using wheelchairs).

- Using the projected peak pedestrian volume, 10 square feet per person is allowed for queing and waiting functions.

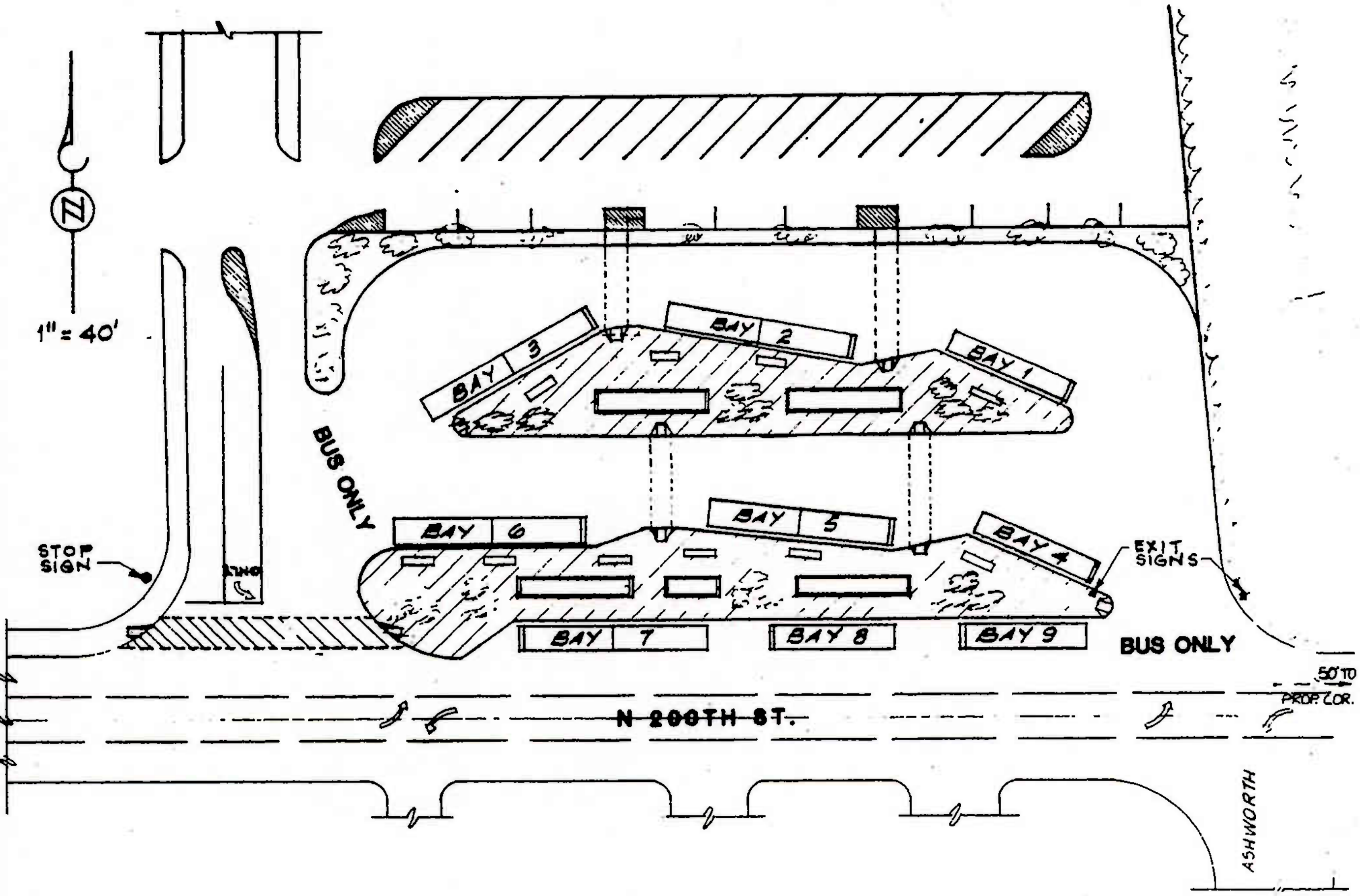


FIGURE 2-1

Configuration of Sawtooth Bays at Aurora Village Transit Center

B. Design Guidelines

1. Pedestrian Spaces

a. Pedestrians passing through the center should be separated from those who are waiting, transferring between buses, and queuing to board and deboard.

b. The curb space immediately adjacent to the bus loading areas should be free of all street level obstacles; except for the bus stop signs, all street furniture (trash cans, benches, payphones, light standards, shelters and information displays) and related pedestrian amenities should be set in 8 feet from the curb where space is available. Where space is not available, the minimum lateral clearance is 3 feet. Street furniture should be placed so it does not block the operator's view of intending passengers or obstruct sight distance. Minimum height clearance for all signs in the bus stop zone should be 7 feet from the bottom of the sign to the ground. Overhanging tree branches should be at least 8 feet from the ground so as not to obstruct signage or interfere with mirrors on the coaches.

c. Pedestrian spaces should be designed to be accessible to people with disabilities. This includes ramps, curb cuts, and other architectural measures such as braille signage, audible signals, and textured walkways to minimize or eliminate barriers for people with visual impairments or other disabilities.

d. Paving materials in pedestrian areas should provide good traction to reduce the risks of falling or slipping. Care should also be taken to vary pavement texture to communicate function and spatial relationships for patrons with sight impairments.

e. Pedestrian spaces should be well lit and should have clear sight lines throughout the facility to promote a secure environment for the users. Passenger shelters should provide a view of passengers through the side panels.

f. Street furniture and shelters should be constructed of durable, vandal-resistant materials. Aesthetics and maintenance needs should be considered in the initial design.

C. General

Transit centers should be designed to minimize conflicts between buses and pedestrians and between buses and autos, both on-site and off-site.

Whenever possible, employee restrooms should be provided at transit centers since drivers often have limited restroom options along their routes.

PARK-AND-RIDE LOT CLASSIFICATIONS

Metro classifies park-and-ride lots as follows:

I. Permanent Facilities

A. Owned or leased by Metro or WSDOT

B. Metro lots maintained by Metro; state lots maintained by Metro or WSDOT

C. High capital investment and/or ongoing budget items

D. Improved facilities and landscaping

E. Generally served by one or more transit routes

F. Usually have passenger facilities

G. Life span of 20 years or more.

II. Metro-Leased Facilities

A. Usually maintained by property owner

B. Low-budget item

C. May or may not be served by a transit route

D. Limited or no passenger facilities

E. Restrictive hours

F. Short-term lease

G. Generally less than 100 stalls

H. Located within the Metro service area.